

## Evaluation of the Proposed Emergency and Remedial Response Plan for the Carbon TerraVault Class VI 26R Project

EPA has completed a review of the proposed Emergency and Remedial Response Plan (dated May 15 2022) for the proposed Carbon TerraVault1 (CTV) Class VI geologic sequestration (GS) project into the Monterey 26R Reservoir. Requests for revisions and additional information are presented in *blue and italic* below

### Facility Information

- a) The coordinates on page 1 appear to be the same as those for the A1-A2 project. Please update the coordinates to reflect the 26R project.*
- b) Please describe the gradual shutdown procedure referenced on page 2. It is not in the Construction, Operation, and Plugging details document dated May 15, 2022.*

### Local Resources and Infrastructure

- a) Please add the injection wells to Figure 1.*
- b) Please revise the title of the figure to read, "Map of the site resources and infrastructure. The project is located 3.36 miles from the census designated area of Valley Acres."*

### Potential Risk Scenarios

There are some inconsistencies between the items in this section and the scenarios described in the section on Emergency Identification and Response Actions. Please make the following revisions:

- a) Remove "CO<sub>2</sub> leakage to USDW or land surface" from this list.*
- b) Please reorder the list of scenarios to match the Emergency Identification and Response actions section.*
- c) Please remove "earthquakes" under "natural disaster" since these are addressed under the seismic events scenario.*



## Emergency Identification and Response Actions

EPA requests some additions/revisions to the descriptions and response actions for the scenarios identified in the Emergency and Remedial Response Plan. These are presented in the table below:

Event/Scenario	EPA Comment/Recommendation
1. Injection Well Monitoring Equipment Failure – Minor Emergency	<p><i>a) Please remove reference to shutting in and restarting the well (in items 5 and 7) under the minor emergency scenario.</i></p>
2. Potential Brine or CO <sub>2</sub> Leakage to USDW	<p><i>a) EPA requests the following revisions to the introduction to this scenario:</i></p> <ul style="list-style-type: none"> <li><i>Broaden the discussion to encompass any evidence of CO<sub>2</sub> or fluid movement out of the injection zone (i.e., not necessarily to a USDW) to address events associated with unanticipated fluid movement pathways, any potential USDW endangerment/unacceptable changes in water quality, or CO<sub>2</sub> leakage to the land surface.</i></li> <li><i>Tie the detection levels to the description of the event, e.g., “This may be identified through elevated concentrations of indicator parameter(s) in groundwater sample(s) or other evidence of fluid (brine) or CO<sub>2</sub> leakage into a USDW. For example, a pressure increase of [insert psi] or a pH of [threshold].”</i></li> </ul> <p><i>b) Please add performing MITs to the response actions, e.g., as part of the reference for the MI failure scenario if a loss is detected.</i></p> <p><i>c) Please revise all the response actions to describe shut in of all injection wells, where mentioned.</i></p>
3. Natural Disaster	<p><i>a) Please make the following changes to the introduction to this section:</i></p> <ul style="list-style-type: none"> <li><i>Remove mention of earthquakes (or reference the induced seismicity scenario).</i></li> <li><i>Move the sentence “If a natural disaster occurs that affects normal operation of the injection well, CTV will perform the following” to the potential response actions section.</i></li> </ul> <p><i>b) The severity of these types of events could range from minor to catastrophic.</i></p> <p><i>c) Please make the following revisions to potential response actions for Major or Serious natural disasters:</i></p> <ul style="list-style-type: none"> <li><i>Revise the response actions to describe shut in of all injection wells (#3).</i></li> <li><i>Edit item 5 to read, “If <del>there is</del> contamination has occurred refer to the Potential Brine or CO<sub>2</sub> Leakage to USDW scenario.”</i></li> <li><i>Edit item 6 to read, “...initiating evacuation procedures <u>(if necessary)</u>.”</i></li> <li><i>Add “Perform MITs on the injection wells to identify if a loss of external mechanical integrity occurred.”</i></li> </ul>



Event/Scenario	EPA Comment/Recommendation
4. Induced or Natural Seismic Event	<p>a) The severity of seismic events could range from minor to major; please revise this to be consistent with the table.</p> <p>b) Please revise or delete the sentence on pg. 9, “An induced seismic event will occur when the reservoir stresses are altered, which would occur during the injection phase,” as this contradicts reference to the injection and post-injection phases above.</p> <p>c) Please clarify how California Geological Survey staff will be among response personnel (or remove them).</p>
5. Induced or Natural Seismic Event—Table 2, Yellow Level	<p>a) Please revise Step 2 to reference shut down of all the injection wells.</p>
6. Induced or Natural Seismic Event—Table 2, Orange Level	<p>a) Step 2: Please reference shut down of all the injection wells.</p> <p>b) Edit Step 5: “Report findings to the UIC Program Director and <u>perform</u> corrective actions.”</p>
7. Induced or Natural Seismic Event—Table 2, Magenta Level	<p>a) Step 1: Please revise “gradual rate reduction plan” to refer to “gradual shutdown” and be consistent with other aspects of the Plan.</p> <p>b) Step 1: Please reference shut down of all the injection wells.</p> <p>c) Edit Step 9: “If USDW contamination <u>or endangerment</u> is detected, <u>or</u> CO<sub>2</sub> leaked.”</p> <p>d) Edit Step 11: “Report findings to the UIC Program Director and <u>perform</u> corrective actions.”</p>
8. Induced or Natural Seismic Event—Table 2, Red Level	<p>a) Step 1: Please reference shut down of all the injection wells.</p> <p>b) “Review seismic and operational data” is on the list twice (items 7 and 10).</p> <p>c) Please add “Assess monitoring plans and where necessary intensify the monitoring plan to ensure containment” similar to the responses at the magenta level.</p> <p>d) Edit Step 9: “If USDW contamination <u>or endangerment</u> is detected, <u>or</u> CO<sub>2</sub> leaked.”</p> <p>e) Edit Step 11: “Report findings to the UIC Program Director and <u>perform</u> corrective actions.”</p>

### Staff Training and Exercise Procedures

There are several typos in this section e.g., mis-spelling of facilities, maintenance, monitors, hazards, and exercise. *Please revise.*